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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,586	07/30/2003	Tomonori Imamura	116629	6181
25944	7590	06/19/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			CANTELMO, GREGG	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,586

Applicant(s)

IMAMURA ET AL.

Examiner

Gregg Cantelmo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-21 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the amendment received March 22, 2006:
 - a. Claims 1-21 are pending;
 - b. The claim objections and 112 2nd paragraph rejection have been withdrawn in light of the amendment;
 - c. The prior art rejection of St-Pierre is withdrawn;
 - d. The prior art rejection of JP '065 stands;
 - e. The prior art rejection of Hashimoto is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, and 6-15 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2002-164065 (JP '065).

JP '065 discloses a fuel cell and a fuel cell control system comprising: measuring the output voltages of the fuel cell stack and diagnosing the humidity level in the electrolyte membrane relative to the voltage measured (Prior art claims as applied to claim 1).

The statistics include average and standard deviation of the voltage (as applied to claim 2).

The moisture level of the electrolyte is monitored as discussed above with a vibrating component shown in Fig. 5 and the average of the vibrating components being a smooth curve (as applied to claims 4 and 8-10).

The output voltages are traced in time (Figs. 4 and 5 as applied to claim 6).

In calculating the average, standard deviation, maximum and minimum voltages for the cells, the results provide both a non-vibrating component represented by the average voltage and a vibrating component from the standard deviation and/or the maximum and minimum voltages (as applied to claim 7).

The fuel cell further includes thermometry means for measuring the temperatures of the fuel cells. The system monitors both voltage characteristics and temperature characteristics, all of which are provided to a processor for storage and diagnosis. The means of JP '065 is held to be structurally capable of performing the same functional diagnosing steps as recite in claims 11-15.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

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Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Response to Arguments

3. Applicant's arguments filed March 22, 2006 have been fully considered but they are not persuasive.

Applicant fails to reason how the claimed invention differs structurally from the fuel cell system of JP '065.

It is held that the apparatus of JP '065 which monitors the voltage of the stack and increases or decreases the water into the stack has all of the requisite claimed structure as recited in claim 1 and thus capable of performing the same functions.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 3, 5 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '065 in view of JP 2003-178789 (JP '789).

The teachings of JP '065 have been discussed above and are incorporated herein.

The differences between claims 3 and 5 are that JP '065 does not teach of diagnosing means diagnoses that the hydrogen electrode is blocked by water, if said average voltage is within a prescribed range and moreover at least one of said

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measured output voltages is not within a prescribed range (claim 3) or wherein said diagnosing means diagnoses that the hydrogen supply is insufficient, if said average voltage is not within a prescribed range and moreover said standard deviation is not within a prescribed range (claim 5), wherein said diagnosing means diagnoses whether or not a supply pressure of said hydrogen as a fuel gas to be supplied to said fuel cell stack is insufficient (claim 18); wherein when a diagnosis result of said diagnosing means indicates that said supply pressure of said fuel gas to be supplied to said fuel cell stack is insufficient, the fuel cell control system is controlled to increase said supply pressure of said fuel gas.

JP '065 discloses monitoring the voltage characteristics of a fuel cell and adjusting parameters to the fuel cell in response to variances in the voltage characteristics.

JP '789 teaches of monitoring the voltage of a fuel cell stack and diagnosing the voltage to determine whether or not the fuel electrode is clogged with water (abstract).

In performing the monitoring of JP '789 upon recognition that a voltage is not within a prescribed range, the system recognizes that the hydrogen electrode is blocked by excess water and thus recognizes that the hydrogen supply is insufficient and thus that the pressure at the hydrogen electrode is insufficient.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of JP '065 by further including a means for monitoring the voltage to determine whether or not the fuel electrode is

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clogged with water since it would have permitted response to the blockage so that the operation of the fuel cell can be improved by unclogging the blocked electrode.

Allowable Subject Matter

5. Claims 16, 17, 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record appears to teach, fairly suggest or render obvious the invention of claims 16, 17, 20 and 21. In particular wherein said diagnosis result of said diagnosis means indicates that said amount of water involved in said fuel cell stack is excessive, a supply pressure of said hydrogen as a fuel gas to be supplied to said fuel cell stack is relatively increased to a supply pressure of said oxygen as an oxidizing gas, and when said diagnosis result of said diagnosis means indicates that said amount of water involved in said fuel cell stack is insufficient, said supply pressure of said fuel gas to be supplied to said fuel cell stack is relatively decreased to said supply pressure of said oxidizing gas (claim 16); and wherein when said diagnosis result of said diagnosing means indicates that said water involved in said fuel cell stack is excessive, a supply pressure of said hydrogen as a fuel gas to be supplied to said fuel cell stack is relatively increased to a supply pressure of said oxygen as an oxidizing gas to be supplied to said fuel cell stack, and when said diagnosis result of said diagnosing means indicates that said water involved in said fuel cell stack is insufficient, said supply pressure of said fuel gas to be supplied to said fuel cell stack is relatively decreased to

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said supply pressure of said oxidizing gas (claim 20).

While various parameters are controlled by the prior art of record, the prior art of record does not disclose a fuel cell system having the structure and functionality of claims 16 or 20.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


gc
June 8, 2006

Gregg Cantelmo
Primary Examiner
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